

## **Systemic Gerobiology**

- **Cellular senescence**

**?? relevance to body aging**

**telomere shortening**

**protein crosslinks and oxidation**

**DNA damage**

**8-oxoguanine**

- **Builtin (evolution-selected) limits to life span?**

**Programmed senescence**

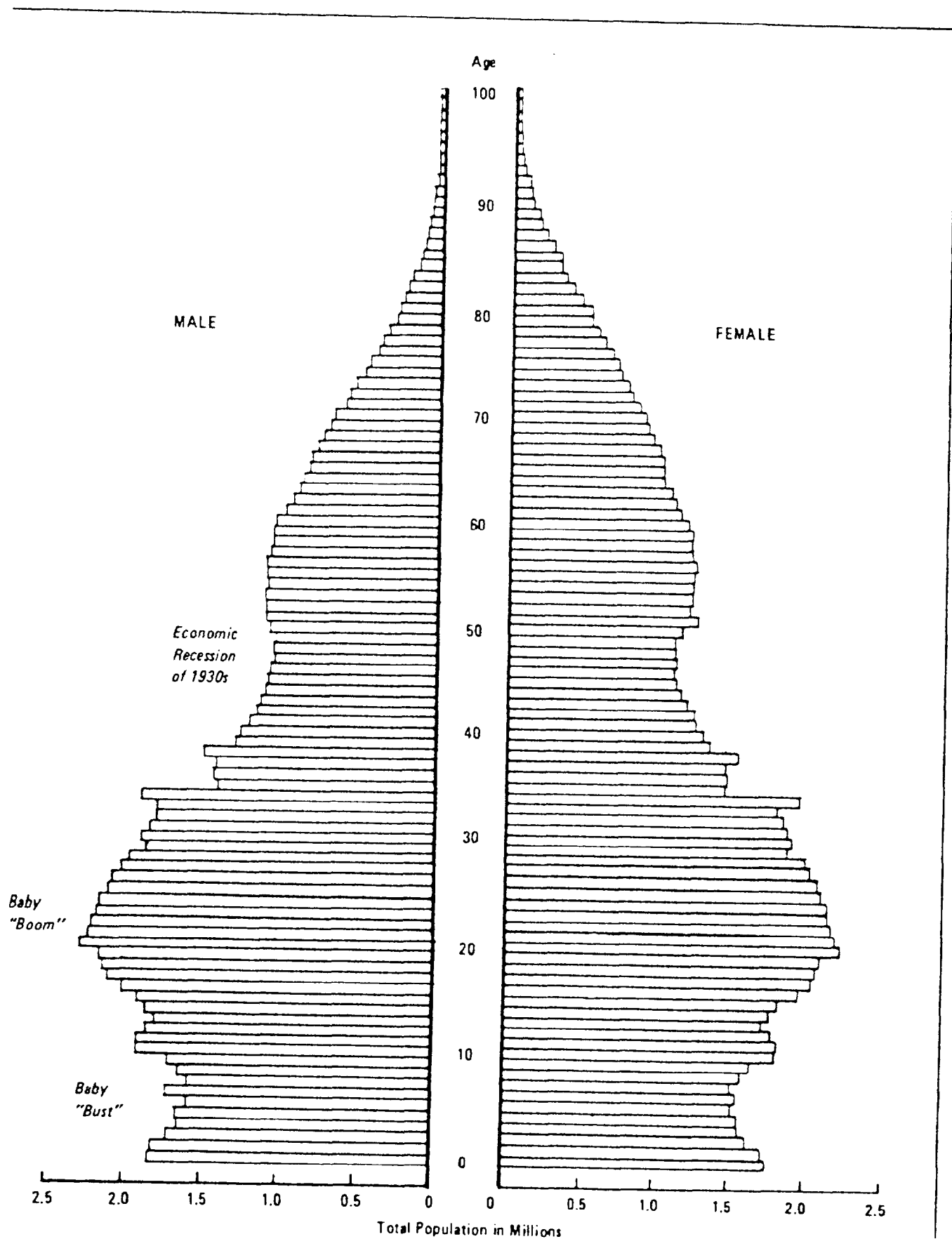
**Just what is selected in human evolution?**

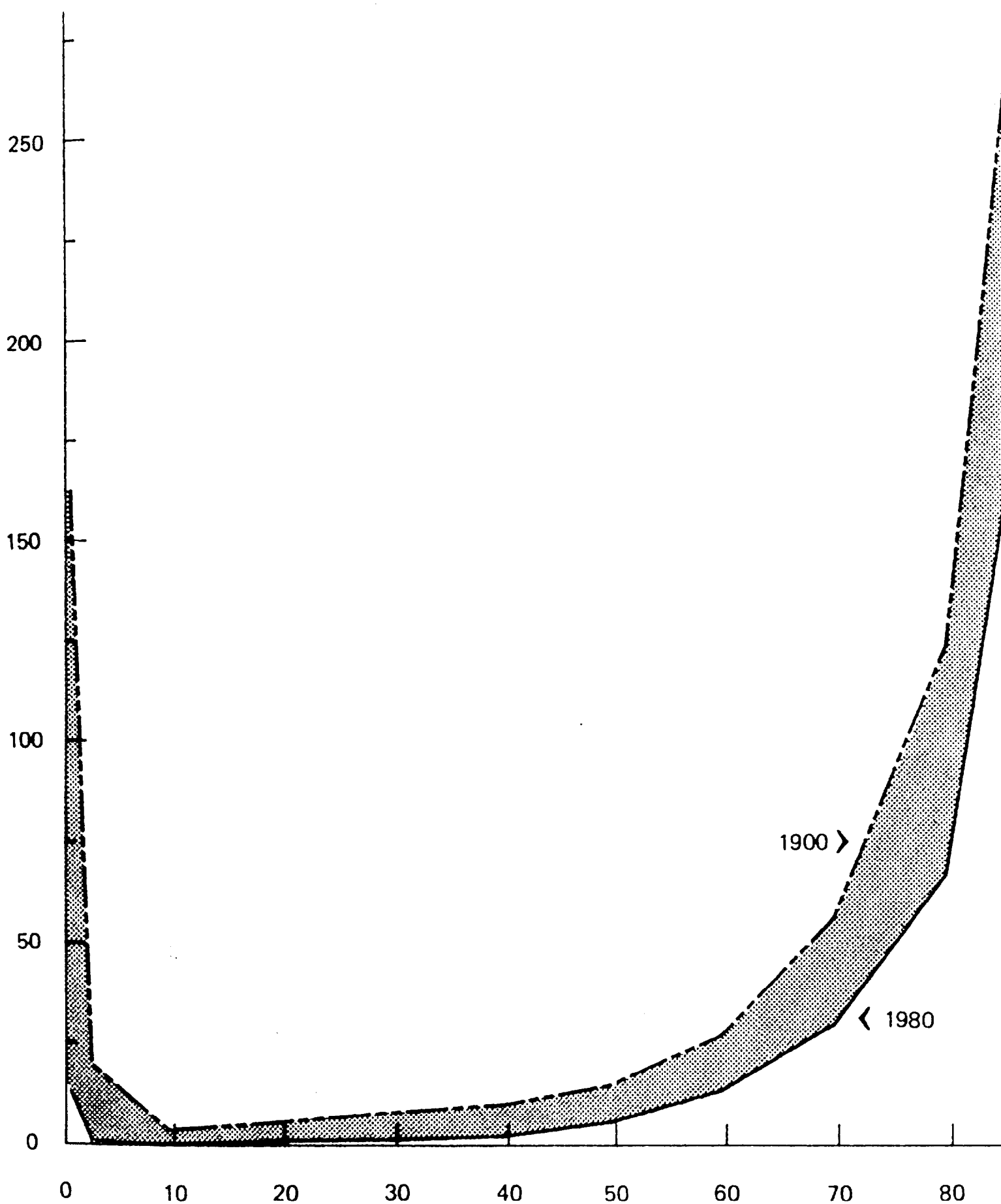
**Homo sapiens**

**is already an uncommonly long-lived species**

## **Specific syndromes of aging**

- **Cardiovascular disease**  
**cholesterol deposits**
- **Alzheimer's**  
**amyloid deposits**
- **Cancer**  
**cumulative mutation**  
**attrition of defense mechanisms**
- **Cataract and other diabetic pathology**  
**glucose adducts to proteins**
- **Menopause**  
**after atresia in fetus, 400-500 ova at birth**  
**depleted month by month**
- **Autoimmune disease**  
**cumulative break-through of autotolerance**
- **Emboli, strokes, aneurysms**  
**cumulative mechanical obstructions or tears**
- **Attrition of immune systems**  
**???**





**Figure 5-2. Change in Age-Specific Mortality Rates:  
United States, 1900 and 1980**

Bogus